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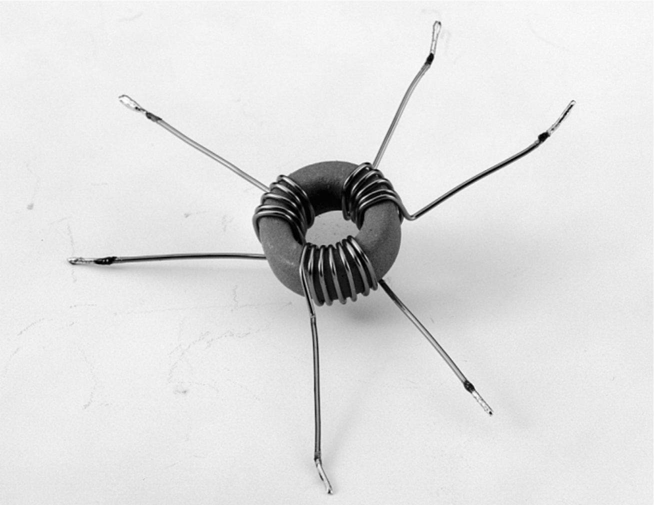
passive splitter for S/PDIF



T. Giesberts

The circuit in the diagram enables the digital audio output of, say, a compact-disc (CD) player to be linked to two different appliances simultaneously. It is, of course, considerably less expensive than the proprietary active splitters on the market.

The circuit is in effect a small transformer that can be wound easily on a Philips Type TN13/7.5/5-3E25 toroidal core. The wire should be 0.5 mm dia. enamelled copper wire. The primary winding is seven turns and there are two secondary windings, each of five turns. The bandwidth of the transformer is 40 kHz to 16 MHz. When both outputs are loaded, there is a voltage of 0.33 V_{p-p} at each output. When one of the outputs is open-circuited, the voltage at the other output rises to 0.43 V_{p-p}, which is caused by the slightly higher primary impedance and the slightly smaller load on the signal source.

A drawback of the splitter is that the output voltage is 34% below the internationally specified level. However, most S/PDIF (Sony/Philips Digital Interface Format) inputs can cope with this perfectly well.

Place the transformer directly at the output of the signal source. The reason for this is that the input and output impedances of the transformer are not exactly 75 Ω. With the transformer directly at the source and provided the coaxial cable at the computer end is terminated correctly into 75 Ω, all will be well.

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